

full range satellite speaker

operation manual

B-1600

B-1500



Miller & Kreisel Sound, Inc.
9351 Deering Avenue
Chatsworth, CA 91311-5858 USA
(818) 701-7010 fax (818) 701-0369
www.mksound.com

©2003 Miller & Kreisel Sound, Inc.



TABLE OF CONTENTS

1.	INTRODUCTION.....	3
2.	SPEAKER HOOK-UP & USAGE.....	3
	WIRING.....	3
3.	OPTIMIZING SPEAKER PLACEMENT.....	3
4.	M&K BACKFIRE PORT SYSTEM.....	4
5.	HOME THEATRE USAGE.....	5
	CENTER CHANNEL.....	5
	SURROUND CHANNEL.....	6
6.	SPEAKER/SUBWOOFER PHASING TEST.....	6
7.	SPEAKER DAMAGE & HOW TO AVOID IT.....	7
8.	M&K 10 YEAR LIMITED WARRANTY.....	7
9.	IF YOU NEED SERVICE OR SET-UP ASSISTANCE.....	7
10.	CABINET MAINTENANCE.....	8
11.	SPECIFICATIONS.....	8

DIAGRAMS

FIGURE 1	SPEAKER WIRING.....	3
FIGURE 2	SEPARATION BETWEEN LEFT & RIGHT SPEAKERS.....	4
FIGURE 3	SURROUND SPEAKER ON SIDE WALLS.....	6
FIGURE 4	SURROUND SPEAKERS ON THE REAR WALL.....	6
FIGURE 5	USING SURROUND SPEAKER ON SIDE AND REAR WALLS.....	6

Please record the following information for your records:

Serial Number: _____

Date of Purchase: _____

Dealer Name: _____

Dealer Address: _____

City/State/Zip: _____

Country: _____

Invoice Number: _____



1. INTRODUCTION

Congratulations! Your new M&K speaker system will give you years of unmatched enjoyment and excitement while listening to your favorite musical and audio/video sources.

We encourage you to read this owner's manual, as there is a great deal of information provided here to help you achieve the best possible performance.

If you have any questions about your speaker system, please contact your M&K dealer or call the M&K factory directly at (818) 701-7010, from 8:30 AM to 5:00 PM Pacific Time, Monday through Friday. You may also send us an e-mail to support@mksound.com. We will be happy to help you with any question you may have.

2. SPEAKER HOOK-UP

The sound quality that you get from your speakers can be affected by the type of speaker wire that you use to connect them. While it is possible to use speaker wire as thin as 22 gauge to hook your speakers up, wire of less than 16 gauge will compromise their sound quality. We strongly recommend using the heaviest gauge wire possible. Your special M&K 5-way binding post input terminals will directly accept wire as heavy as 4 gauge!

For wire runs of up to 20 feet, 16 gauge wire is acceptable. For runs up to 30 feet, you should use a minimum of 14 gauge. For up to 40 feet, use a minimum of 12 gauge, and over 40 feet should use 10 gauge.

There are a very wide variety of premium speaker cables available from a number of specialist manufacturers. We do not endorse any specific brand of premium cable, but we do recommend the highest quality cable that fits your budget. Beware, though — with cables, expensive is not always better. If you have any questions, contact your M&K dealer for advice.

WIRING

The Positive (+) lead from your amplifier or receiver should be connected to the RED (+) "INPUT" terminal, and the Negative (—) lead from your amplifier or receiver should be connected to the BLACK (—) "INPUT" terminal. See Figure 1.

3. OPTIMIZING SPEAKER PLACEMENT

Your speakers can be installed in a wide variety of locations. They can be placed on stands, shelves, or bookcases, or permanently mounted using brackets.

Your speakers have threaded mounting hardware permanently mounted into the cabinet on the speaker's back baffle. These allow you to mount the speakers in a wide variety of locations, and to orient them for the best possible sound. There is a four hole pattern using inserts threaded for 1/4 - 20 hardware (1/4 inch in diameter, and 20 threads per inch) on the B-1600 and a single 3/8" threaded insert on the B-1500. These mounting patterns accommodate M&K speaker stands and mounting brackets.

The sound quality produced by your speakers can be significantly enhanced by careful attention to their placement. While we understand that you may not redesign your room to accommodate your speakers, coming as close as possible to the ideal placement will give you much better sound.

You can orient the B-1500 and B-1600 either horizontally or vertically.

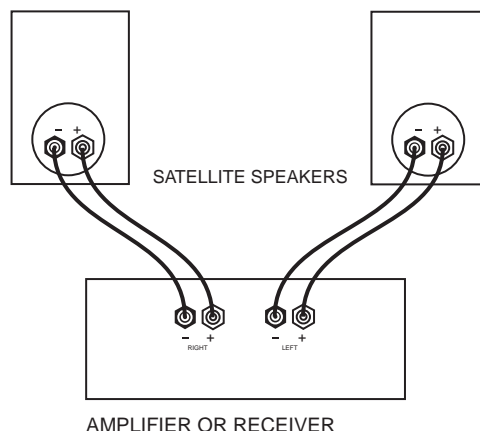
Ideally, the tweeter should be at the same height from the floor as your ears, when you are sitting in your main listening position.

If you have the speakers mounted above or below this height, they sound their best when you angle the speakers so that the tweeters are aimed at your ears when you are in the main listening position.

ROOM LOCATION

There are two considerations regarding room location of your 1500 or 1600 speakers.

FIGURE 1





When you are operating your speakers as Full Range Vented Box speakers, taking advantage of the M&K Backfire Port system, you will hear maximum bass and low frequencies when the speakers are located within a few inches of a wall or the back of a cabinet. See Section 4 below for more details.

When you are operating your speakers as Sealed Box speakers, it is not necessary to locate them near a wall. In fact, you will probably find that the sonic imaging of the speakers improves as you move the speakers away from room surfaces.

You will also find that the imaging improves when the speakers are away from room surfaces when operating them as Full Range Vented Boxes. In either case, please feel free to experiment to find the best sound in your room.

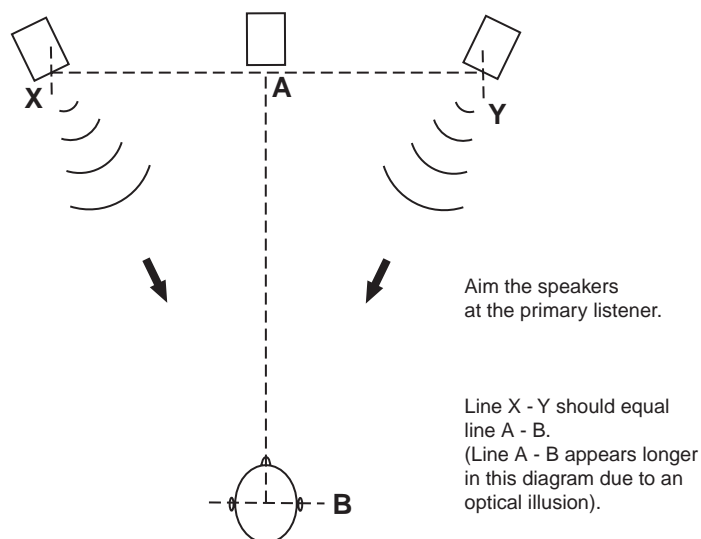
SEPARATION BETWEEN LEFT AND RIGHT SPEAKERS

Here is a formula for achieving the ideal left to right stereo imaging. Think of a triangle formed by the locations of the Left and Right speakers and your listening position. Ideally, the subtended angle formed should be between 45 and 50 degrees. Roughly, this means that the Left and Right speakers should be separated by about the same distance that you are sitting back from the speakers. In other words, if the distance from your listening position to the point directly between the speakers is 10 feet, place the speakers so their centers are 10 feet apart. See Figure 2.

On Figure 2, the length of line A - B should be about the same as the length of line X - Y. (They may not seem to be the same in this diagram due to an optical illusion).

Try to follow the formula as close as you can. You can fine tune the placement by listening to a source with an image (such as a vocalist) centered between the speakers. When listening in stereo (no Center Channel speaker), move the speakers closer together or farther apart in small increments until you hear the sharpest and most cohesive image, especially in the phantom center. You may also want to angle (or "toe-in") the speakers slightly. This often improves the sharpness of the stereo image, reduces room colorations, and provides a wider seating area. The angled front baffles of your speakers also provide this benefit.

FIGURE 2



4. M&K BACKFIRE PORT SYSTEM (rear of cabinet)

On the back panel of the speaker is the M&K Backfire Port. Inside its plastic tube is a plug that can be easily removed or inserted. **DO NOT THROW THIS PLUG AWAY.** This plug can be used to adjust the performance of the speaker to fit your system needs or personal preferences.

When the plug is inserted into the speaker cabinet, the plug seals the speaker port, making it a SEALED BOX speaker. When the plug is removed from the speaker cabinet, the port is open, making it a VENTED BOX speaker. When the speaker is used as a vented box speaker, the 1500 and 1600 operate as FULL RANGE speaker. Here are the advantages and disadvantages of each mode, with recommended applications. Feel free to experiment with both configurations to see which one you prefer.

FULL-RANGE VENTED BOX - UNPLUG AND PLAY! (Plug removed from port):

Removing the plug increases the bass output of the speaker. This is recommended when the system has no subwoofer. The vented box configuration generally gives the most satisfying bass when the speaker is being used as a full-range configuration. When you are not using a subwoofer, the plug should be removed. The M&K Backfire Port system is most effective when the output of the port couples to a room surface (such as the back wall). You will hear the greatest bass output from your speakers when they are located close to the wall. Feel free to experiment for the best sound.

SEALED BOX (Plug inserted in port):

If you are using a subwoofer with your B-1600 or B-1500 speakers, operate them as sealed boxes. This will give you the best transition of sound between the satellite speaker and the subwoofer. If you are using a high-pass filter (BMC-MINI), you **must** operate the speaker as a sealed box in order for the filter to operate optimally.



5. HOME THEATRE USAGE

LEVEL-MATCHING

The factor most critical to achieving excellent Home Theatre performance is level-matching the three front and two surround channels. This is even more important than timbre-matching. We strongly recommend that you purchase a Radio Shack Sound Level Meter (get the analog meter, not the digital version) and use it to measure the output of the speakers when playing the test tones generated by your processor or receiver.

Set the meter to the "C" weighting scale and the "SLOW" setting. Using your amplifier or receiver's internal noise calibration test, set the levels so that all channels measure the same level. **WHENEVER POSSIBLE, DO NOT CALIBRATE LEVELS BY EAR!** Using a meter is an inexpensive way to be certain that your system is calibrated properly.

TIMBRE-MATCHING

One of the most important factors in achieving excellent Home Theatre performance is timbre-matching. On film soundtracks, specific sounds are often moved from left to right or from front to back in the room. When the speakers reproducing these sounds have dissimilar characteristics, there will be an audible discontinuity when the sound shifts from one speaker to another.

Timbre-matched speakers have very similar tonal characteristics and sound, which come from three critical elements: similar or identical drivers; similar or identical crossovers; and similar or identical frequency response. In full M&K systems, these elements have been addressed. You can be assured that the system can achieve the full potential of Home Theatre sound.

When you have a Home Theatre system, speaker placement becomes extremely important, as you will be balancing four or five (or more) speakers rather than two. The following guidelines are for a five-channel Pro-Logic or 5.1 channel Dolby Digital AC-3 system, but if you do not have a Center channel, the instructions for the other four channels still apply.

CENTER CHANNEL

The Center channel speaker in any multichannel system is the most important speaker in the system. This speaker often produces more output than the left and right speakers combined. This speaker should be of the highest possible quality, and as similar as possible in response and radiation pattern to the left and right speakers. Three identical speakers are best, unless the center channel is designed to work with a set of left and right speakers.

It is also important to have as much amplifier power as possible for the Center channel. As a minimum, the three front channels should be identical in power output, but it is better if the Center channel has more. If you have less power in the Center channel, this will be the limiting factor in the total output capability of the system when watching and listening to video sources.

The Center channel speaker should be located as close as physically possible to the television or projection screen, preferably just above or below the screen. If that is not possible, then just to the left or the right of the screen may be acceptable. M&K's Phase-Focused crossover will always give you smooth and even coverage throughout the room.

If the television is not in the center of the room (or not centered between the Left and Right speakers), the Center channel speaker should still be as close as possible to the screen -- even if it is outside the left and right speakers (such as a TV located in a corner of the room outside the stereo spread of the left and right speakers). Good results can be achieved in unusual configurations when the Center speaker is as close as possible to the screen.

The Left and Right front channel speakers in a Home Theatre system should be placed the same as the left and right speakers in a stereo setup. Some listeners, however, may prefer to reduce the distance between the left and right speakers to bring the size of the acoustic image closer to the size of the screen image.

For example, with a 25" direct-view television, you would want the speakers closer together than you would with a 100" projector. One recommendation is to separate the speakers by 1.5 times the diagonal screen size; another is to place the left and right speakers to create a 45 degree angle with the main listening position.

There is a great deal of latitude in this area, as it is one of personal preference (especially if you will listen to music without video).

It is also preferred that the speakers be equidistant from the listening position. Equidistant usually means that when the center speaker is on top of the television, the left and right speakers will sit in front of the set (they will be farther from the wall behind the TV than the center speaker). Ideally, the speakers should be at the same height as the screen, but it is much more important that all three speakers be at as close to each other's height as possible. If the center is much higher or lower than the other speakers, the effect can be distracting. Angling, or toeing-in the speakers, to aim at the listening position often improves imaging.

When using a Center channel speaker, you have extra flexibility in placing the left and right speakers, as the Center channel speaker will tie most dialog and effects directly to the screen.



SURROUND CHANNELS

Surround speakers can be installed in a wide variety of locations, but in some rooms their installation can be quite a challenge to install. If you have any questions, please don't hesitate to contact your M&K dealer or the M&K factory. We will be happy to discuss your system with you.

We recommend placement of the surround speakers on the side walls of the room, two to three feet above the listeners' heads, either directly adjacent to the listening position or behind it. You can aim the speakers to fire towards each other (across the listening area), or you can aim them to fire towards the back wall at an angle. The surround speakers should not be in front of the main listening position if possible.

If you mount the surrounds on the side wall behind the listening position, they can be aimed towards each other or angled towards the back wall or the side wall surface directly behind them. By reflecting sound behind the listening position, you may increase the sense of envelopment in the sound.

If you want or need to mount speakers on the back wall of the room, there are several options. You can aim them so that they fire towards each other (so they fire along the back wall); you can aim them towards the front wall of the room; or you can angle them so they fire toward the side walls. Symmetrical arrangements work best.

The speakers should be a minimum of a few feet away from the nearest listener. Ideally, the surround speakers should not call attention to themselves as separate sources of sound.

If the surrounds must be located close to the listeners, aiming them at the room walls or even the ceiling can help to reduce any directional effect. As described above, this can produce a desirable result even in rooms where the surround speakers are an adequate distance from the listeners' heads.

If the surrounds cannot be placed on a wall, try placement on tables or the floor to the sides of the main listening position, firing up towards the ceiling. This can work very well in environments that do not allow permanent attachment of speakers to the walls.

Some listeners prefer to use multiple pairs of surround speakers. While this is not necessary, it can provide a broader and deeper surround effect, with better coverage in very large rooms. When using multiple pairs of surround speakers, a symmetrical installation pattern works best. For example, if you are using two pairs of surround speakers, one pair could be mounted on the back wall of the room, mounted equidistant from the back corners, with the other pair mounted on the side walls of the room, equidistant from the same back corners.

6. MAIN SPEAKER/SUBWOOFER PHASING TEST

In any system using a subwoofer separate from Main speakers, a phasing test must be performed to insure good bass blending. This test insures optimum sound in the critical bass frequencies where your Subwoofer and Main speakers overlap.

Play a familiar CD, DVD, LP, or tape with steady, consistent bass content through your system. Listen carefully to the "mid-bass" region of 75 - 125 Hz. This is the part of the spectrum where electric or string basses and drums predominate. Then reverse the phase of either the subwoofer or BOTH Main speakers.

If your Subwoofer has a PHASE switch on its back panel, move it either from (+) to (—) or vice versa.

If your Subwoofer does not have a PHASE switch, it takes a bit more work. You will have to change the Positive and Negative speaker inputs on the back of BOTH Main speakers.

You can do this at the back of both Main speakers, or at the Subwoofer's TO SPEAKERS terminals, but never at both locations. The lead that was on the Positive (+) terminal should be switched to the Negative (—) terminal, and vice versa. When switching

FIGURE 3

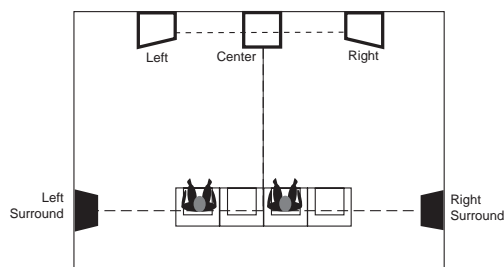


FIGURE 4

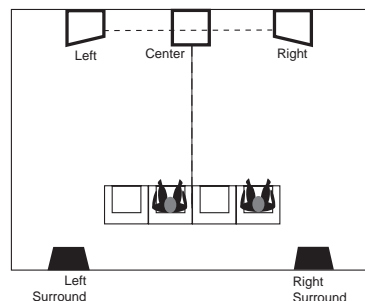
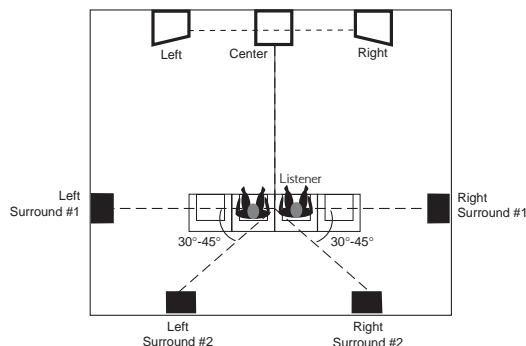


FIGURE 5





speaker wires, take care to protect your amplifier. Make sure that the wires do not touch each other when you are making the switch. As a safety measure, we suggest that you turn the amplifier off before making the switch.

Now listen to the same musical passage as you did earlier, concentrating on the mid-bass region. If you hear less bass, the original connection (or switch position) was correct. If you hear more bass, the new connection (or switch) is correct.

You need to perform this test because when Main speakers are located separate from a Subwoofer, each speaker is at a different distance from your ear. In some cases, the difference will be just enough so that the output from the Subwoofer arrives out of phase with the output of the Satellites. When this happens, that critical mid-bass is actually cancelled. You should re-do this test any time you move your speakers.

If you want to experiment further, move the Main speakers either towards or away from your listening position, making changes in small increments. This will "focus" the system's sound to its optimum. When you hear the best combination of stereo image localization and maximum impact and output in the mid-bass, you have the ideal location.

7. SPEAKER DAMAGE & HOW TO AVOID IT

An important factor to consider with any loudspeaker system is the potential for speaker damage. Even though your M&K Speakers have extremely high power handling ability (especially for Main speakers), they still can be damaged by relatively low powered amplifiers.

While very few M&K Speakers are actually returned for service, the vast majority of those returned are not for manufacturing defects. Instead, they are returned because they have been overdriven, almost always because the amplifier or receiver used was driven into clipping distortion. This damage is considered abuse, and is not necessarily covered under warranty.

This clipping distortion occurs when the demands of the music are greater than the amplifier's available power. It can occur at 20 watts with a small amplifier, or at 400 watts with a large amplifier. When this happens, the amplifier's output waveform (which should look like a smooth arc) is "clipped" off, exhibiting a flat top instead of the arc.

This "clipped" waveform contains multiples of the original amplified frequencies, sometimes at higher levels than the original signal itself. For tweeters, this can be very damaging, as this distortion is well above the audible range (where you are unable to hear it), and where the tweeter is most vulnerable to damage.

When an amplifier "clips", it generates a high level of high frequency energy (much higher than normal program material) which passes through the crossover to the tweeter. This energy can overheat the tweeter in a matter of seconds and destroy it.

When this happens, the sound becomes harsh and grating, and a break-up is often audible in the bass frequencies. It will become uncomfortable to listen to, especially when compared to a slightly lower volume level. When you are listening at high volume levels, be aware of the onset of clipping distortion, and turn the volume down slightly if the sound takes on the character described above.

When tone controls or equalizers are used to boost frequencies, the problem occurs much more rapidly. Even a small boost of low or high frequencies can easily double the power requirement and lead to amplifier clipping at moderate levels. Therefore, you should use your tone controls judiciously, avoiding extreme boosts of the bass and treble controls, especially when you are listening at high volume levels.

The best way to avoid speaker damage is to use common sense. Use moderate boosts of tone controls or equalizers, at the very most. Listen carefully for any harshness and break-up, especially at high volume levels, and turn down the volume when needed. If you cannot get enough volume, you may need to consider a higher-powered amplifier. If you have any questions about this, please contact M&K, and we will be happy to discuss it with you further.

8. M&K 10 YEAR WARRANTY

All M&K Satellite speakers carry a ten year limited parts and labor warranty. This warranty is transferable to new owners up to ten years from the date of original purchase. It does not cover abuse, misuse, repairs by unauthorized service stations, speakers without M&K serial numbers, speakers not sold by authorized M&K dealers, and those damaged in shipping or by accident. If you have any questions about the warranty, please contact M&K.

9. IF YOU NEED SERVICE OR SET-UP ASSISTANCE

Contact your dealer or M&K with a complete description of the problem. Please have the unit's model and serial numbers (found on the back of the cabinet), date of purchase, and your dealer's name. You can call M&K between 8:30 AM and 5:00 PM Pacific Time, Monday through Friday, at (818)701-7010 or send an e-mail to service@mkound.com. If you call outside these hours, leave a message, and we will return your call promptly.



DO NOT RETURN YOUR SPEAKERS TO THE FACTORY FOR SERVICE WITHOUT OBTAINING PRIOR AUTHORIZATION

10. CABINET MAINTENANCE

Treat the cabinet as you would any piece of fine furniture. Its painted finish does not require any special maintenance; regular dusting with a lint-free cloth and periodic cleaning is all that is required. Do not use any solvent based cleaners, as they may damage the cabinet surface.

11. SPECIFICATIONS

B-1600

IMPEDANCE	4 ohms
MINIMUM POWER:	10 watts RMS
RECOMMENDED POWER:	amplifiers with between 25 and 200 watts RMS or more
MAXIMUM POWER:	200 watts RMS unclipped peaks
FREQUENCY RESPONSE:	30 Hz - 20 KHz \pm 2dB
MAGNETICALLY SHIELDED:	Yes
DIMENSIONS (H x W x D):	11-5/8" x 7-1/2" x 10-1/4"
WEIGHT:	12 Lbs.

B-1500

IMPEDANCE	4 ohms
MINIMUM POWER:	10 watts RMS
RECOMMENDED POWER:	amplifiers with between 25 and 200 watts RMS or more
MAXIMUM POWER:	200 watts RMS unclipped peaks
FREQUENCY RESPONSE:	35 Hz - 20 kHz \pm 2dB
MAGNETICALLY SHIELDED:	Yes
DIMENSIONS (H x W x D):	9-29/32" x 6-1/4" x 9-1/4"
WEIGHT:	9 Lbs.